

Claims

1. A residual current device (RCD) including means for sensing a differential current flowing in mains supply live and neutral conductors and for disconnecting the supply from a load when the differential current exceeds a predetermined level, the device further including a circuit for detecting a double grounded neutral fault comprising means for causing a current to flow between the live and neutral conductors, such current being, at least intermittently, of sufficient amplitude and duration as to cause disconnection of the supply by the component of the current detected by the sensing means in the presence of a double grounded neutral.
- 15 2. An RCD as claimed in claim 1, wherein the current is alternately on and off, the amplitude and duration of the current during each on period being sufficient to cause said disconnection.
- 20 3. An RCD as claimed in claim 1, wherein the current alternates between periods of relatively higher and lower amplitude, the amplitude and duration of the current in each higher amplitude period being sufficient to cause said disconnection.
- 25 4. An RCD as claimed in claim 2, wherein the periods for which the intermittent current flows is determined by a timing circuit powered from the live and neutral conductors.
- 30 5. An RCD as claimed in claim 4, wherein the timing circuit forms part of a single integrated circuit which also responds to a residual current above the predetermined level to initiate the disconnection of the supply.

6. An RCD as claimed in claim 1, wherein the current flows continuously through an impedance connected between the live and neutral conductors.

5 7. An RCD as claimed in claim 6, wherein the impedance is substantially reactive.

8. An RCD as claimed in claim 6, wherein a thermal switch is connected in series with the impedance.

10 9. An RCD as claimed in claim 1, further including means for providing a visual indication when the current is flowing.

15 10. An RCD as claimed in claim 1, wherein the double grounded neutral detection means is contained in a common housing with the sensing means.

11. An RCD as claimed in claim 1, wherein the double grounded neutral fault detecting circuit does not include a
20 transformer.